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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/723,419	11/26/2003	Heinz Eisenschmid	10191/3461	2637
26646	7590	12/14/2004	EXAMINER	
KENYON & KENYON ONE BROADWAY NEW YORK, NY 10004			PRUCHNIC, STANLEY J	
			ART UNIT	PAPER NUMBER
			2859	

DATE MAILED: 12/14/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/723,419	Applicant(s) EISENSCHMID ET AL.	
	Examiner Stanley J. Pruchnic, Jr.	Art Unit 2859	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>11/26/03, 7/29/04</u> (25 Letters) | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Objections

2. Claims 1 and 11 are objected to because of the following informalities:
 - a. Claim 1 is objected to as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. The omitted structural cooperative relationships are: any means for determining a boiling point, although the preamble indicates the purpose of the device is for determining a boiling point.
 - b. Similarly, Claim 11 is objected to as being incomplete for omitting essential steps, such omission amounting to a gap between the steps. See MPEP § 2172.01. The omitted steps are: any step for determining a boiling point, although the preamble indicates the purpose of the device is for determining a boiling point.

Appropriate correction is required.

3. For consideration as to the merits, the omitted structural cooperative relationships and steps are not considered essential to the claimed invention.

See MPEP § 2172.01 wherein the following is stated: ">But see *Ex parte Nolden*, 149 USPQ 378, 380 (Bd. Pat. App. 1965) ("[I]t is not essential to a patentable combination that there be interdependency between the elements of the claimed device or that all the elements operate concurrently toward the desired result"); *Ex parte Huber*, 148 USPQ 447, 448-49 (Bd. Pat. App. 1965) (A claim does not necessarily fail to comply with 35 U.S.C. 112, second paragraph where the various elements do not function simultaneously, are not directly functionally related, do not directly intercooperate, and/or serve independent purposes.).<"

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1 and 2 are rejected under 35 U.S.C. 102(b) as being anticipated by **MANDROIAN** (U. S. Patent No. 3,898,017).

MANDROIAN discloses a device capable of use for determining a boiling point of a hydraulic fluid of a hydraulic system, comprising:

an electrical heating element 50 situated in the fluid 25 (Col. 2, Lines 46-53), the electrical heating element 50 acting as an actuator (Col. 3, Lines 3-21) of a "micropump" 10 (Fig. 1) and being situated in a chamber 15 thereof.

With respect to the intended use of the apparatus, *i.e.*, for determining a boiling point of a hydraulic fluid of a hydraulic system: It has been held that a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations. *Ex parte Masham*, 2 USPQ2d 1647 (1987).

Furthermore, the intended use is recited in the preamble. The functional limitations recited in the preamble which have structural implications have been given patentable weight because, although it has been held that a preamble is denied the effect of a limitation where the claim is drawn to a structure and the portion of the claim following the preamble is a self-contained description of the structure not depending for completeness upon the introductory clause. See *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951).

In this instance, the description in the body of the claim draws life and meaning from the functional limitations in the preamble, but only to the extent that they are required: thus the heating element must be able to function as an actuator of a micropump. But since a micropump and a chamber thereof are not positively claimed, they are not considered essential to the claimed invention, but only are considered to further describe the environment of intended use. Similarly, the limitations of Claim 2 further recite limitations on the environment of intended use, not further limiting the structure of the claimed invention.

With respect to Claim 2: In this instance, the description in the body of the claim does not draw life and meaning from the functional limitations in the preamble, since the functional limitations in the preamble do not have structural implications. **MANDROIAN** further discloses a device capable of use for determining a boiling point of a brake fluid of a braking system in a motor vehicle, since the inlet and outlet could be directly attached to a brake line in a motor vehicle, if so desired. **MANDROIAN** does not explicitly state this intended use, but no further structural limitation is made by the recitation of Claim 2, so these limitations are not considered to have additional patentable weight.

Regarding the term "micropump": absent a special definition, the term is considered broadly to require the pump to be small, since no particular length or volume scale is provided, the pump disclosed by **MANDROIAN** is broadly considered small enough to be considered a "micropump" as claimed by Applicant.

6. Claims 1, 2 and 11 are rejected under 35 U.S.C. 102(b) as being anticipated by **MILLS** (U. S. Patent No. 5,814,721).

Regarding Claims 1 and 2: **MILLS** discloses a device (Col. 5, Lines 29-41) disclosed as being used for determining a boiling point of a hydraulic fluid of a hydraulic system, and, regarding Claim 2, the device being used for determining a boiling point of a brake fluid of a braking system in a motor vehicle comprising:

an electrical heating element (5) situated in the (brake) fluid, the electrical heating element (5) acting as an actuator of said micropump and being situated in said chamber 11B thereof.

Regarding Claim 11: **MILLS** discloses the method for determining a boiling point of a fluid of a hydraulic system using a device having a heating element, the method comprising:

conveying the fluid into a chamber of a micropump with the aid of the heating element (**MILLS** discloses the fluid cannot flow from inner chamber 11B to outer chamber 10 except as a result of boiling; see Col. 8, Lines 1-21, for example);

heating the fluid to boiling using the heating element 5; and

thereafter ascertaining the boiling point of the fluid with the aid of an electrical resistance of the heating element (which inherently aids this ascertaining, since no heating would occur without the resistance, *i.e.*, "Ohmic heating" is the required physical property for using the electric heating element).

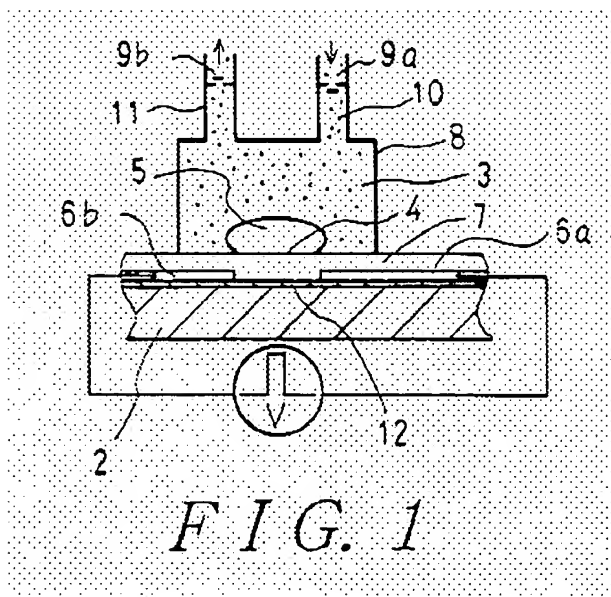
7. Claims 1-4 and 10 are rejected under 35 U.S.C. 102(b) as being anticipated by **SHIRAISHI** (U. S. Patent No. 6,071,081).

SHIRAISHI discloses a device capable of use for determining a boiling point of a hydraulic fluid of a hydraulic system, and, regarding Claim 2, the device being capable of use for determining a boiling point of a brake fluid of a braking system in a motor vehicle comprising:

a micropump (Fig. 1) including a chamber 8 containing the fluid (liquid 3);
an electrical heating element (12, 7) situated in the fluid, the electrical heating element (12,7) acting as an actuator of said micropump and being situated in said chamber 8 thereof.

Further regarding Claim 3: SHIRAISHI discloses the device according to claim 1, wherein, according to a thin film Lines 48-52), the heating element is applied to a substrate (heater board technique (Col. 2, 2) which is provided with a cover to form a chamber 8 (Col. 2, Lines 43-56).

Further regarding Claim 4: SHIRAISHI discloses the device according to claim 3, wherein the chamber has an inlet 9a and an outlet 9b, which are situated in one of the substrate and the cover (See Fig. 1, below; considering generally element 8 the cover, having the inlet and outlet ports, and the substrate includes element 7).



Further regarding Claim 10: SHIRAISHI discloses the device has a multilayer construction (See Fig. 1, above; wherein elements 2, 12 and 6 constitute a multiplayer construction).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

10. Claims 8, 9, 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over **MILLS** as applied to claims 1-2 and 10 above, and further in view of **PEUKER** (U. S. Patent No. 4,408,902).

MILLS, to summarize, discloses all the limitations as claimed by Applicant in Claims 1-2 and 10, as described above in Paragraph 6 as applied to Claims 1-2 and 10, further including the limitations of a thermocouple 6 situated in the chamber 11B.

MILLS as described above, does not explicitly disclose the heating element materials and coating as claimed by Applicant in Claim 8, a PTC resistor element in the chamber as claimed by Applicant in Claim 9, the abrupt change in the electrical resistance of the heating element and the heating performance of the heating element

being lowered as claimed by Applicant in Claim 12, and the method of operating the heating element in a pulsed manner at regular intervals as claimed by Applicant in Claim 13.

PEUKER discloses a method and device for determining the boiling point of brake fluid (which may be installed in the vicinity of a brake or wheel cylinder or in a conduit carrying the brake fluid; Col. 4, Lines 22-26), the device including:

Regarding Claim 8: The materials of the heater are not specified in the applied prior art. Official Notice is taken that it would have been obvious to one having ordinary skill in the art at the time the invention was made to produce the heating element from one of aluminum and platinum, since these are well known materials that will heat up when current is passed through them, as required by the heater of MILLS or PEUKER, and to coat the heater by a dielectric in order to protect from accidentally short circuiting the device as is very commonly done in the art.

Regarding Claim 9 and 12: **PEUKER** discloses a resistor element situated in the chamber, and discloses the resistor element is useful for both heating and determining temperature of the brake fluid (Col. 3, Lines 19-39ff). In the example of Col. 4, Lines 13-20, the meter stopped at the boiling point, showing that the electrical resistance of a *PTC resistor* heating element had an abrupt change (See also Fig. 2, curve C), and bubbles formed. **PEUKER** teaches that at that time the heating performance of the heating element has been lowered (Col. 3, Lines 26-39; Col. 1, Lines 37-48), as claimed by Applicant in Claim 12. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to substitute a PTC resistor element for the heating element of MILLS in order to provide a clear indication of the boiling point of brake fluid as taught by **PEUKER**.

PEUKER teaches that gradual heating is required (Col. 1, Lines 37-48). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to operate the heating element in a pulsed manner at regular intervals in order to provide a finer controlled gradual heating, as suggested by **PEUKER**.

11. Claims 5-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over **SHIRAISHI** as applied to claims 1-4 and 10 above, and further in view of Hower et al. (U. S. Patent Application Pub. No. US 20040013536 A1, hereinafter **HOWER**).

SHIRAISHI, to summarize, discloses all the limitations as claimed by Applicant in Claims 1-4 and 10, as described above in Paragraph 7 as applied to Claims 1-2 and 10, further describing the heat resistor 12 and protective layer 7 are formed on a board 2 by film forming techniques such as sputtering and photolithography.

SHIRAISHI as described above, does not explicitly disclose the substrate and lid being composed of the particular materials listed in Claim 5, or wherein the substrate is composed of silicon, as claimed by Applicant in Claim 6, or wherein the cover is composed of silicon, as claimed by Applicant in Claim 7.

HOWER discloses a micro-fluidic pump having a thermopneumatic actuating mechanism wherein the chamber and walls may be composed of silicon (Paragraph [0036]).

HOWER further discloses or suggests that it is advantageous to form the chamber from silicon in order to benefit from the ability to use well-known micro-fabrication techniques enabling forming very small devices, requiring low energy for operation.

HOWER is evidence that ordinary workers in the field of micropumps would recognize the benefit of using silicon as taught by **HOWER** for either one of the substrate or cover of **SHIRAISHI** in order to benefit from the use of well-known micro-fabrication techniques enabling forming very small devices requiring low power consumption in operation.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to substitute silicon for either one of the substrate or cover of **SHIRAISHI** in order to benefit from the use of well-known micro-fabrication techniques enabling forming very small devices requiring low power consumption in operation as taught by **HOWER**.

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The prior art cited in a form PTO-892 and not mentioned above disclose related measurement devices and micropumps.

- US 6520197 B2 (Deshmukh; Ajay et al.)
- US 20010010799 A1 (Prosperetti, Andrea et al.)
- US 6065864 A (Evans; John et al.)
- US 5375979 A (Trah; Hans-Peter)
- US 5127471 A (Weislogel; Mark M.)
- US 4781469 A (Turon-Lagot; Gilbert)
- US 4869596 A (Klein; Hans-Christof et al.)
- US 5330268 A (KLEIN, H C et al.)
- GB 2197723 (KLEIN, H C et al.)

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stanley J. Pruchnic, Jr., whose telephone number is **(571) 272-2248**. The examiner can normally be reached on weekdays (Monday through Friday) from 7:30 AM to 4:00 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diego F. F. Gutierrez can be reached at **(571) 272-2245**.

The **Official FAX** number for Technology Center 2800 is **(703) 872-9306** for **all official communications**.

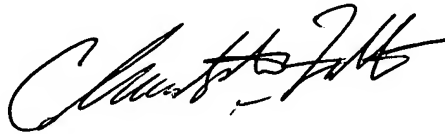
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